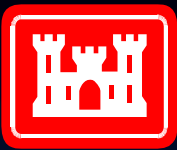


MN Floodplain Managers
November 20, 2003
Rochester Flood Control





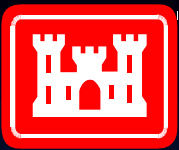
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Introduction

Leon F. Mucha, P.E.

(608) 687-9104, ext. 2

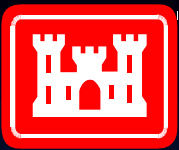
- Civil Engineer
- Masters in Construction Management
- Resident Engineer for Rochester
- Local Resident



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Mitigation Considerations

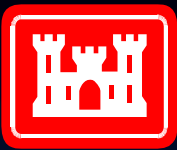
- Flood Damage
- Aesthetics
- Fish and Wildlife



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Flood Damage Mitigation

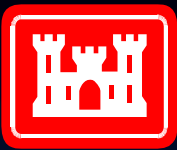
- Remove structures from floodplain
- Reduce flow rates
- Increase channel capacities



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Structure Removals

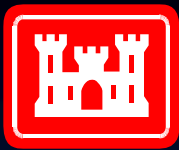
- Subject to Federal relocation requirements
- City staff did bulk of work
- 2,000 homes and businesses removed from floodway



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Reduce Flow Rates

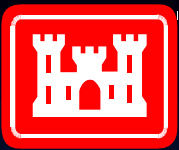
Flow rate reduction achieved via flow retention in upstream reservoirs on Zumbro River and major tributaries



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100-yr Flow Rate Comparison

Waterway	Before	After
Cascade Creek	6,500	4,400
Bear Creek	13,500	8,900
Silver Creek	5,200	3,400
Zumbro River (37th St NW)	23,900	20,900

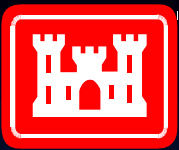


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Increase Channel Capacities

Two Primary Adjustments

- Make channel deeper
- Make channel wider



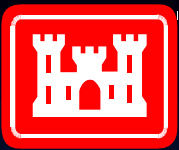
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Increase Channel Capacities

Examples of Original Conditions







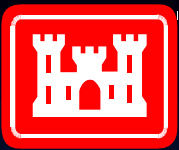
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Increase Channel Capacities

Examples of Deeper







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Increase Channel Capacities

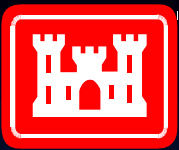
Examples of Wider











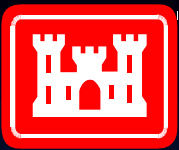
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Increase Channel Capacities

Other Channel Design Factors

- Flatter to control flow velocity
- Scour protection



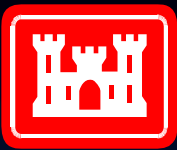
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Increase Channel Capacities

Examples of Flatter







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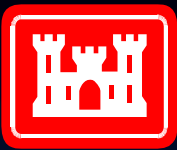
Increase Channel Capacities

Scour Protection

(Good ol'

Red, White, and Blue Riprap)

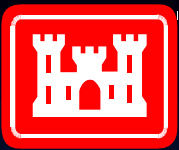




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Aesthetics Mitigation

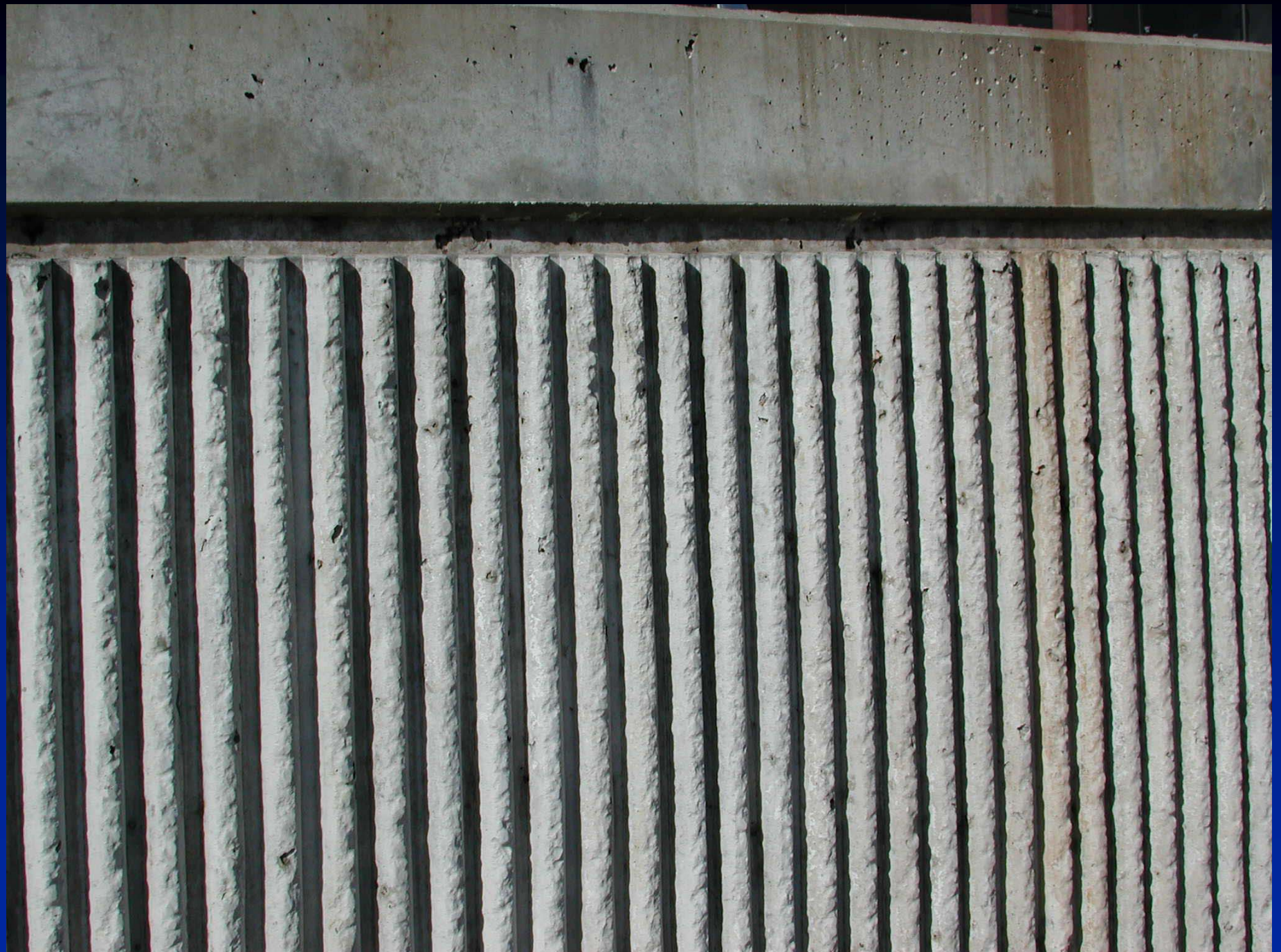
- Textured Concrete Walls
- Sheet Piling Facing
- Interlocking Slope Protection
- Sod over Riprap
- Recreational Improvements

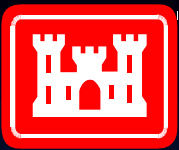


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Aesthetics Mitigation

Textured Concrete Walls



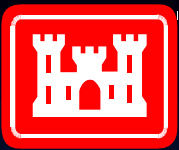


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Aesthetics Mitigation

Sheet Piling Facing





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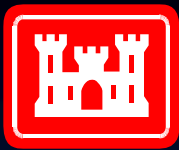
Aesthetics Mitigation

Interlocking Slope Protection





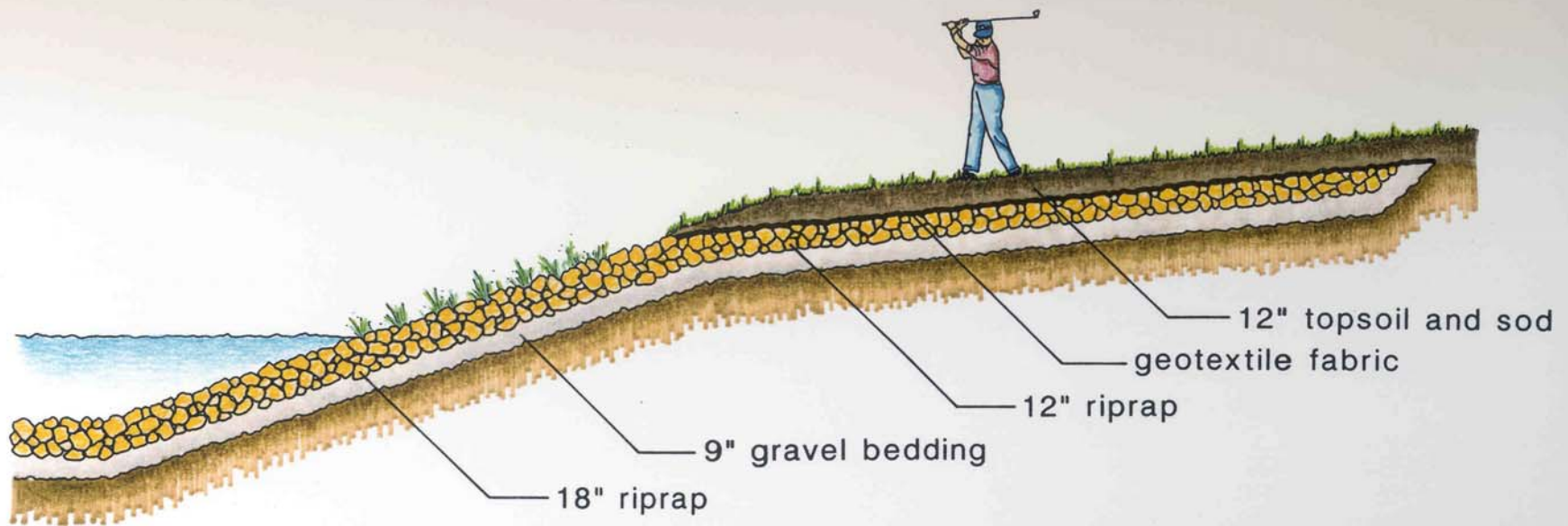




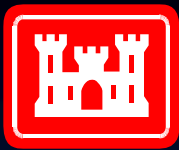
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Aesthetics Mitigation

Sod over Riprap





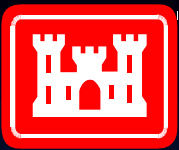


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Aesthetics Mitigation

Recreational Improvements

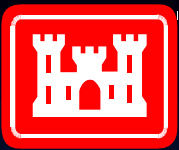




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Fish & Wildlife Mitigation

- Channel in Channel
- High Flow Bank Vegetation
- Fish Structure



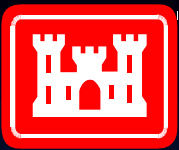
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Fish & Wildlife Mitigation

Channel in Channel





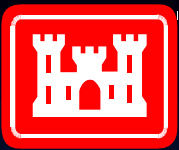


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Fish & Wildlife Mitigation

High Flow Bank Vegetation





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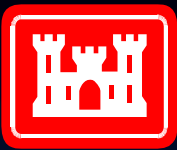
Fish & Wildlife Mitigation

Fish Structure



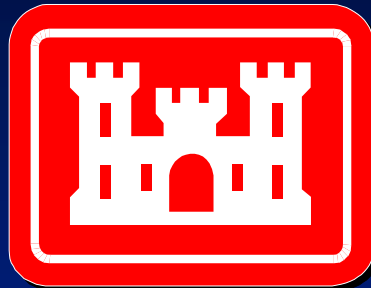






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